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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
08/984,005	12/03/97	DUNTON R	42390.P5319

LMC1/0510

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EXAMINER	
WILSON, J	
ART UNIT	**PAPER NUMBER**
2712	14
DATE MAILED:	05/10/00

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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Paper No. 14

Application Number: 08/984,005
Filing Date: December 3, 1997
Appellant(s): Dunton et al.

Intel Corporation
For Appellant

EXAMINER'S ANSWER

This is in response to appellant's brief on appeal filed February 16, 2000.

(1) Real Party in Interest

A statement identifying the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The brief does not contain a statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief. Therefore, it is presumed that there are none. The Board, however, may exercise its discretion to require an explicit statement as to the existence of any related appeals and interferences.

(3) Status of Claims

The statement of the status of the claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Invention

The summary of invention contained in the brief is correct.

(6) Issues

The appellant's statement of the issues in the brief is correct.

(7) Grouping of Claims

Appellant's brief includes a statement that claims 1, 9, and 17 do not stand or fall together and provides reasons as set forth in 37 CFR 1.192(c)(7) and (c)(8).

(8) Claims Appealed

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) Prior Art of Record

The following is a listing of the prior art of record relied upon in the rejection of claims under appeal.

JP 2/76481	Kuribayashi	03/15/90
5,886,659	Pain et al.	03/23/99
5,278,658	Takase	01/11/94

(10) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1, 9, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuribayashi (JP 2-76481 (A)) and Pain et al. (U.S. 5,886,659).

Regarding Claim 1, Kuribayashi teaches an image processing circuitry (See Fig. 1), the image processing circuitry being adapted to process digital output signals produced by an imaging

array. Although Kuribayashi fails to teach a digital imaging array, it is notoriously well known in the art to have digital imaging arrays in for outputting digital signals, such as the sensor similar in Pain et al. Pain et al specifically discloses that it is desirable to integrate ADCs (analog to digital converters) and other functional circuits, such as an image sensor, on a single chip to improve system reliability, noise resistance and chip-to-chip interfacing (col. 1, lines 28-32). The discussion of system reliability and improving chip-to-chip interfacing would have obvious to one having ordinary skill in the art to mean that signals are easily transferable to other elements in an imaging system such as a memory means. This is the reasoning why the examiner took Official Notice stating the using these arrays produces less noise in signals and allows for easier storage . Therefore it would have been obvious to one of ordinary skill in the art to include a digital imaging array for outputting signals to be processed.

Kuribayashi also teaches that the transmission light control part (element 15) processes saturated (bright) pixel outputs signals differently from non-saturated signals (page 6 of translation) by adjusting the optically shielded elements (element 14a) according to the intensity of the light.

Claim 9 is analyzed and discussed with respect to Claim 1. (See rejection of Claim 1 above.)

Claim 17 is analyzed and discussed with respect to Claim 1. (See rejection of Claim 1 above.)

3. Claims 2-8, 10-16, and 18-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuribayashi and Takase (U.S. 5,278,658).

Regarding Claim 2, Kuribayashi fails to disclose the image processing circuitry is adapted to process saturated digital pixel output signals by subtracting an estimate of the dark image fixed pattern noise for the imaging array sensors. However, Takase '658 teaches that an average of dark signals output from the optically shielded cells is removed from the image signal output from each of the cells arranged in an effective area (or regions; col. 1, lines 57-61). By averaging the dark signals allows for a more accurate removal process from the image signals since each cell is different. Kuribayashi teaching of processing saturated and non-saturated differently by processing each cell in distinct manners, it would have been obvious to include Takase '658 teaching of removing the average of dark signals from each cell which would include the saturated signals of Kuribayashi. Therefore, it would have been obvious to one of ordinary skill in the art to modify Kuribayashi with Takase '658 to include the image processing circuitry being adapted to process saturated pixel output signals by subtracting an estimate (average) of the dark image fixed pattern noise for the imaging array sensors.

Regarding Claim 3, Kuribayashi fails to disclose the image processing circuitry is adapted to estimate the dark fixed pattern noise by sampling from a dark image comprising stored digital pixel output signals. However, Takase '658 teaches that a sample-hold circuit (element 4) may be used for sampling dark signals which produces average dark signals (col. 5, lines 10-15). Sample-hold circuits are well known in the art for sampling and storing signals to be processed in

a processing circuitry, and would have been obvious to include in Kuribayashi for temporarily storing dark signals for subtracting from image signals. Therefore, it would have been obvious to one of ordinary skill in the art modify Kuribayashi with Takase '658 by including in the image processing circuitry an estimate of the dark fixed pattern noise by sampling from a dark image comprising stored pixel output signals.

Regarding Claim 4, Kuribayashi fails to disclose the image processing circuitry is adapted to sample the dark image in regions corresponding to the regions of saturated digital pixel output signals in an image of interest. However, Takase '658 teaches that dark signals are removed from image signal output from each of the cells arranged in an effective area (col.1, lines 57-60), which includes saturated pixels, and the subtracter subtracts the dark signal component from an image signal obtained for each corresponding cell under an exposure condition (see Abstract). This is performed for the purpose of properly eliminating the noise from the exact area so that the image will lack unwanted noise from a particular area of interest. Therefore, it would have been obvious to one of ordinary skill in the art to sample the dark image regions corresponding to the regions of saturated pixel output signals in an image of interest.

Regarding Claim 5, both Kuribayashi and Takase '658 describes the image processing circuitry is adapted for use with imaging array comprising a CCD sensor.

Regarding Claim 6, Kuribayashi fails to disclose the image processing circuitry comprises fixed pattern noise reduction circuitry. However, Takase '658 teaches a dark signal removing means coupled to the dark signal component generating means for removing the dark signal

component generated for each cell. By using this type of fixed pattern noise reduction circuitry allows the system to remove dark signals from each cell for producing images without dark current. Therefore, it would have been obvious to one of ordinary skill in the art for the image processing circuitry to comprise a fixed pattern noise reduction circuitry.

Claim 7 is analyzed and discussed with respect to Claim 6. (See rejection of Claim 6 above.)

Claim 8 is analyzed and discussed with respect to Claim 4. (See rejection of Claim 4 above.)

Claim 10 is analyzed and discussed with respect to Claim 2. (See rejection of Claim 2 above.)

Claim 11 is analyzed and discussed with respect to Claim 3. (See rejection of Claim 3 above.)

Claim 12 is analyzed and discussed with respect to Claim 4. (See rejection of Claim 4 above.)

Claim 13 is analyzed and discussed with respect to Claim 5. (See rejection of Claim 5 above.)

Claim 14 is analyzed and discussed with respect to Claim 6. (See rejection of Claim 6 above.)

Claim 15 is analyzed and discussed with respect to Claim 7. (See rejection of Claim 7 above.)

Claim 16 is analyzed and discussed with respect to Claim 8. (See rejection of Claim 8 above.)

Claim 18 is analyzed and discussed with respect to Claims 1 and 2. (See rejection of Claims 1 and 2 above.)

Claim 19 is analyzed and discussed with respect to Claim 3. (See rejection of Claim 3 above.)

Claim 20 is analyzed and discussed with respect to Claim 4. (See rejection of Claim 4 above.)

Claim 21 is analyzed and discussed with respect to Claim 5. (See rejection of Claim 5 above.)

Claim 22 is analyzed and discussed with respect to Claim 6. (See rejection of Claim 6 above.)

Claim 23 is analyzed and discussed with respect to Claim 7. (See rejection of Claim 7 above.)

Claim 24 is analyzed and discussed with respect to Claim 8. (See rejection of Claim 8 above.)

(11) Response to Argument

The applicant argues the use of "saturated" is not synonymous with Kuribayashi's use of "bright". The applicant definition of saturated is an intensity of light that exceeds a dynamic range. This normally causes an overexposed image quality. Kuribayashi discloses

with reference to the constitution an "abnormally strong light". This implies that unwanted signals are produced, not just regular bright signals that are a part of the image. There is a difference between "normal bright" signals which are necessary to achieve a balanced signal, and "abnormally bright" signals which would overwhelm a pixel's capacity, and create noise. Kuribayashi then processes the "abnormally strong" light signal differently from the other signals. The applicant states that Kuribayashi discloses "the use of shutters to block out light of abnormally high intensity so that a better image is captured" on page 9 of the Appeal Brief. With reference to page 5, lines 6-8 of Kuribayashi reference, it is stated that light of abnormally high intensity can be obstructed and a normal video signal can be obtained reliably. This is done by putting shutters over each pixel to impede transmission of the abnormally high intensity light. If you eliminate "normal bright" signals from the image, the result would be a shadowed image. One having ordinary skill would know that eliminating these signals is not advantageous. Referring to page 6, first and second paragraphs of Kuribayashi, it is stated that when an abnormally high intensity light is detected, these signal will be treated in a manner different than the other signals. This meet the claimed limitation of Claims 1, 9, and 17.

The examiner realizes that Kuribayashi teaches an image array, but fails to teach a digital image array. However, digital imaging arrays are well known in the art. When digital charge amount exceeds a maximum binary signal value, overflowing will occur similar to an analog signal. Both analog imaging signals and digital imaging signals are essentially the same

with respect to the overflowing aspect, and, therefore, the examiner fails to see the discrepancy.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

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JBW
May 8, 2000

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